FILE NO. 035474/US – 475396.00008

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

On Appeal to the Board of Appeals and Interferences

Appellant(s)	:	Chris HARRISON
Serial No.	:	10/752,977
Filed	:	January 7, 2004
For	:	METHOD AND APPARATUS FOR PROVIDING TEMPERATURE-REGULATED BATTERY CHARGING
Confirmation No.:		4797

Examiner: Aaron C. Piggush

Art Unit: 2838

BRIEF ON APPEAL

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Confirmation No.: 4797

United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

BRIEF ON APPEAL

On October 9, 2007, the U.S. Patent and Trademark Office (the "Patent Office") received a Notice of Appeal from the final rejection of claims 1-9, 11-23, 25-37, 39-48 and 52-54 contained in the Final Office Action issued by the U.S. Patent and Trademark Office (the "Patent Office") on June 7, 2007 in the above-identified patent application. On September 7, 2007, Appellant submitted an Amendment after Final Office Action ("Amendment after Final"), in which claims 49-51 were cancelled, independent claims 1, 15 and 29 were amended, and new claims 52-54 were added. After a receipt of a first Advisory Action dated September 27, 2007, Appellant submitted a Notice of Appeal on October 9, 2007. Subsequently, a second Advisory Action dated October 12, 2007 was received by Appellant in which the Examiner confirmed that the claim amendments and new claims contained in the Amendment after Final would be

entered, but indicated that pending claims 1-9, 11-23, 25-37, 39-48 and 52-54 are still finally rejected.

In accordance with 37 C.F.R. § 41.37, this supplemental brief is being submitted in support of the appeal of the final rejection of pending claims 1-9, 11-23, 25-37, 39-48 and 52-54. For at least the reasons set forth below, the final rejection of pending claims 1-9, 11-23, 25-37, 39-48 and 52-54 should be reversed.

I. REAL PARTY IN INTEREST

The real party in interest is New York University of New York, New York. New York University is the assignee of the entire right, title and interest in the present application.

II. RELATED APPEALS AND INTERFERENCES

Appellant and the Appellant's legal representatives are unaware of any appeals or interferences related to the present application which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-9, 11-23, 25-37, 39-48 and 52-54 are under consideration in the above-referenced application, all of which have been finally rejected.

In particular, claims 1, 3, 6-9, 11-13, 15, 17, 20-23, 25-27, 29, 31, 34-37, 39-41, 43-48 and 52-54 (after the entry of claim cancellation and amendments, and addition of new claims as provided in Amendment after Final) stand finally rejected

under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,016,047 issued to Notten et al. (the "Notten Patent").

Claims 2, 4, 14, 16, 18, 28, 30, 32 and 42 stand finally rejected under 35 U.S.C. § 103(a) as being unpatentable over the Notten Patent, in view of U.S. Patent No. 5,767,659 issued to Farley (the "Farley Patent").

Claims 5, 19 and 33 stand finally rejected under 35 U.S.C. § 103(a) as being unpatentable over the Notten Patent and the Farley Patent, in view of U.S. Patent No. 5,889,385 issued to Podrazhanzky et al. (the "Podrazhanzky Patent").

Claims 14, 28 and 42 stand finally rejected under 35 U.S.C. § 103(a) as being also unpatentable over the Notten Patent, in view of U.S. Patent No. 6,188,202 issued to Yagi (the "Yagi Patent").

Claims 10, 24, 38 and 49-51 have been cancelled, without prejudice.

Appellant appeals from the final rejections of pending claims all pending claims 1-9, 11-23, 25-37, 39-48 and 52-54. A copy of all of the pending claims is attached hereto in the Appendix.

IV. STATUS OF AMENDMENTS

Subsequent to the mailing of the Final Office Action dated June 7, 2007, Appellant filed the Amendment after Final in which claims 49-51 were cancelled, independent claims 1, 15 and 29 were amended, and new claims 52-54 were added. After a receipt of a first Advisory Action dated September 27, 2007, Appellant submitted a Notice of Appeal on October 9, 2007. Subsequently, a second Advisory Action dated October 12, 2007 was received by Appellant in which the Examiner confirmed that the

claim amendments and new claims contained in the Amendment after Final **would be entered**, but stated that pending claims 1-9, 11-23, 25-37, 39-48 and 52-54 are still finally rejected.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Currently-pending independent claims 1, 15 and 29 relate to a battery changer, process and storage medium for providing a temperature-regulated charging of a battery. For example, as recited in these independent claims, a temperature data associated with the battery is obtained. A particular amount of a charge is applied to the battery based on the temperature data of the battery. Further, **the battery is maintained at a predetermined threshold temperature during at least a majority of an entire time period in which the charge is applied to the battery**. In addition, **the particular amount of the charge is 6.5A or greater at least when the charge is initially applied to the battery**.

An exemplary charging platform according which is associated with the independent claims as currently pending in the present application is described in the specification of the present application and shown in Figures 3 and 4. Referring to Figure 4, the exemplary charging platform includes five temperature sensors 409 and utilizes potentiometers to calibrate each sensor to equivalent levels, e.g., a LM335 device can be used as the base for each sensor. The LM335 output voltage is the temperature in Kelvin, i.e., 1 mV = 1 degree K. A "divide by 20" amplifier 405 may be used to convert the 0-10V range on a DAQ card 403, which may also have two 0-10V analog output channels that may used to control the charging, e.g., in the 0-500mV

range, with a power supply 411 (e.g., Hewlett Packard HP6264B). Thus, in one exemplary embodiment of the present invention, a computer control program 401 can vary the voltage from the DAQ card 403 in response the temperature sensor measurements, and the power supply 411 may respond by outputting between no current to a maximum current, e.g., 20A, to the battery 413. (See Appellant's specification, *e.g.*,, p. 10, para. [0026]; and Figures 3 and 4).

According to an exemplary implementation of the present invention which is associated with the independent claims as currently pending, a computer control program of the exemplary platform/arrangement according to the present invention can be used to perform the exemplary steps, the flow diagram of which is shown in Figure 8 of Appellant's application. For example, after charging is initiated in step 100, the battery voltage is measured and compared to the last measured battery voltage in step 110. If the difference between the measured voltages is less than predetermined threshold (e.g., zero), taking into account the tolerance of the system, the battery may be fully charged, and the charging is complete and terminated in step 120. (See *id.*, p. 15, para. [0036]; and Figure 8).

In one exemplary embodiment associated with the currently pending claims, if the difference between the measured voltages is more than the predetermined threshold, taking into account the tolerance of the system, the battery may not be fully charged and an exemplary microcontroller can determine the analog temperature value from the temperature sensor in step 130. The microcontroller can then convert the analog temperature value to Celsius for internal use in step 140. Based on this temperature value, the maximum charge current value can be determined using a

specified procedure/control function. This charge current value may be converted to an analog signal in step 160, and the signal is output to the power supply in step 170, which then regulates the charge transmitted to the battery. After a specified time delay in step 180, the battery voltage is again measured in step 110, and the process is repeated until battery charging is complete. (See *id.*, pp. 15-16, para. [0036]; and Figure 8).

For example, temperature measurements may be taken at different points on the surface of the battery to locate an area on the battery with the least thermal lag time. As shown in Figures 5A and 5B, *graphs 550 and 570 of the temperature of a 6500mAh, NiMH D-cell battery can be provided at the lower middle 551, the upper middle 552, the bottom 553 and the top 554 of the battery, as well as the ambient temperature 555 during charging.* During such exemplary charging, both the lower side and bottom side of the battery (e.g., a negative terminal of the battery) have the quickest drop in temperature. (See *id.*, p. 11, para. [0028]; and Figures 5A and 5B). It is also possible to use the initial charging currents of greater than 6.5A, e.g., 10A, 14.5A. (See *id*, Figure 7).

VI. GROUNDS OF REJECTION TO BE REVIEWED

The grounds of rejection on appeal to be reviewed are as follows:

A. whether the Examiner failed to establish a *prima facie* case that claims 1, 3, 6-9, 11-13, 15, 17, 20-23, 25-27, 29, 31, 34-37, 39-41, 43-48 and 52-54, which stand rejected under 35 U.S.C. § 103(a), are unpatentable over the Notten Patent;

B. whether the Examiner failed to establish a *prima facie* case that claims 2, 4, 14, 16, 18, 28, 30, 32 and 42, which stand rejected under 35 U.S.C. § 103(a), are unpatentable over the Notten Patent, in view of the Farley Patent;

C. whether the Examiner failed to establish a *prima facie* case that claims 5, 19 and 33, which stand rejected under 35 U.S.C. § 103(a), are unpatentable over the Notten Patent and the Farley Patent, in view of the Podrazhanzky Patent; and

D. whether the Examiner failed to establish a *prima facie* case that claims 14, 28 and 42, which stand rejected under 35 U.S.C. § 103(a), are unpatentable over the Notten Patent, in view of the Yagi Patent.

VII. ARGUMENTS

1. Primary Prior Art relied on by the Examiner

The Examiner relies on Notten Patent, taken alone or in combination with the Farley Patent, the Podrazhanzky Patent and/or the Yagi Patent for maintaining the final rejections.

The Notten Patent relates to a battery management system which includes input means for receiving input signals representative of a physical quantity of a battery and processing means for calculating at least one physical quantity of the battery at least partially based on the input signals and a battery temperature; and for generating an output signal derived from the calculated physical quantity. The Notten Patent also describes a battery charger/discharger including a battery management system. (See Notten Patent, Abstract). As described in the Notten Patent, the battery management system 100 of FIG. 2 controls the battery charger 200 by maintaining the

battery temperature substantially at a predetermined temperature curve. In a simple form, the battery temperature is maintained at a constant temperature of, for instance, 30°C. Alternatively, the battery temperature is maintained at a predetermined offset, for instance 10°C., related to the ambient temperature. (See *id.*, col. 26, lns. 6-17).

The described simulation tool of the Notten Patent can be used to design an optimum temperature curve for a specific application and operating environment. It will be appreciated that any conventional control loop may be used to control the battery charger 200 in such a way that the battery temperature substantially matches the predetermined temperature curve. The current or voltage level supplied by the battery charger 200 may be controlled by the control loop. Alternatively, the battery charger 200 may use a pulsed-voltage or pulsed-current charging scheme, where the control loop controls, for instance, the pulse duration and/or pulse shape. Obviously also suitable combinations of the charging schemes may be used. The battery management system 100 uses the calculated battery temperature for accurately controlling the battery charger 200. It will be appreciated that in a simple embodiment, the battery management system 100 may use a measured battery temperature to control the battery charger 200. (See *id.*, col. 26, lns. 18-35).

The Notten Patent states that its FIG. 8a shows that the battery voltage increases at higher charging currents due to the higher potential drop. (See *id.*, col. 26, lns. 65-67; and Fig. 8a). The temperature development during charging is allegedly shown in FIG. 10a of the Notten Patent. The temperature becomes higher at higher currents. According to the Notten Patent, the strongest temperature rise occurs when the pressure starts to level off. This is due to the large heat contribution of the oxygen

recombination reaction, which occurs at an overpotential of 1.2 V. (See *id.*, col. 27, lns. 30-35; and Fig. 10a).

The Farley Patent relates to a battery pack including a component in which predetermined battery parameters definitive of a battery pack characteristic may be stored, together with a battery parameter sensor. (See *id.*, Abstract). In particular, the arrangement of the Farley Patent uses a processor that monitors cell temperature with time. For example, temperature measurements are logged at intervals such as each 5-10 seconds, and when a profile which matches a stored profile indicative of substantially full charge is identified, the transistor may be switched to shunt the charging current. The battery pack temperature may then rise due to the heat dissipated in a resistor R enabling the simple full charge detection by temperature of the battery charger to operate to end or shut-off the fast charge current in appropriate charger types. The processor of the Farley Patent may be arranged such that this overcharge protection occurs only when the temperature rise is due to the charging current (i.e. flow into the cells). (See *id.*, col. 5, lns. 35-51; and col. 19, lns. 50-60).

As shown in Fig. 8b of the Farley Patent, the cell temperature is read and stored so that a profile of cell temperature with time may be built up. If the cell temperature is within the range (step 89) for which fast charging is appropriate, then the cell temperature profile established to date is examined to see if the profile is equivalent to that of a full charged cell array (step 800). If not, after a pause of 1 minute and assuming the timer which has set the fast charging time limit before current shunting is to be applied has not expired (801), control loops back to a point label (a) where a

portion of the aforesaid control regime is repeated. An outcome of this iteration is that repeated samples of cell temperature with time are stored and a profile built up which will eventually equate with the full charge profile (at step 800). An adjustment to the assumed charge state (i.e., 90% charged which is also known as profile) may be made to account for temperature. Whether full charge was reached or not, the current charge level, based on the charging which has occurred applied to the previously stored battery charge status, is displayed. At this point when the battery is fully charged (at step 805), the current shunting transistor is switched on so that only a trickle current remains at the cell terminals. (See *id.*, col. 10, lns. 1-27; and Fig. 8b).

The Podrazhanzky Patent relates to determining the state of charge of each cell in a battery of series-connected cells and independently adjusting the charging process of each cell so that each cell is fully charged and no cell is overcharged or undercharged, and similarly for batteries in a battery pack (See Podrazhanzky Patent, col. 1).

The Yagi Patent relates to a battery charging device which includes an ECU (30) that has: an ordinary charge control section (34) adapted to charge a battery (12) in an ordinary charge mode; an under charge control section (36) adapted to charge a battery (12) in an under charge mode; and mode switching controller (38) which switch the output paths of the ordinary charge control section (34) and the under charge control section (36), thereby to select one of the charge modes. (See Yagi Patent, Abstract).

2. Relevant Case Law and Procedure(s)

35 U.S.C. § 103 Case Law

"To reject claims in an application under Section 103, an examiner must show an unrebutted *prima facie* case of obviousness." *In re Rouffet*, 47 U.S.P.Q.2d 1453, 1455 (Fed. Cir. 1998). The Supreme Court in *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966), stated:

> Under Section 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined.

Indeed, to sustain a rejection under 35 U.S.C. § 103(a), there must be some teaching, other than the instant application, to alter the prior art to arrive at the claimed invention. "The problem confronted by the inventor must be considered in determining whether it would have been obvious to combine the references in order to solve the problem." *Diversitech Corp. v. Century Steps, Inc.*, 850 F.2d 675, 679 (Fed. Cir. 1998).

The objective standard for determining obviousness under 35 U.S.C. § 103, as set forth in *Graham v. John Deere, Co.*, 383 U.S. 1 (1966), requires a factual determination to ascertain: (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; and (3) the differences between the claimed subject matter and the prior art. Based on these factual inquiries, it must then be determined, as a matter of law, whether or not the claimed subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the alleged invention was made. *Graham*, 383 U.S. at 17. Courts have held that there must be some suggestion, motivation or teaching of the desirability of making the combination claimed by the applicant (the

"TSM test"). *See In re Beattie*, 974 F.2d 1309, 1311-12 (Fed. Cir. 1992). This suggestion or motivation may be derived from the prior art itself, including references or disclosures that are known to be of special interest or importance in the field, or from the nature of the problem to be solved. *Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573 (Fed. Cir. 1996).

Although the Supreme Court criticized the Federal Circuit's application of the TSM test, *see KSR International Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741, (2007) the Court also indicated that the TSM test is not inconsistent with the *Graham* analysis recited in the *Graham v. John Deere* decision. *Id.*; *see In re Translogic Technology, Inc.*, No. 2006-1192, 2007 U.S. App. LEXIS 23969, *21 (October 12, 2007). Further, the Court underscored that "it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does." *KSR*, 127 S. Ct. at 1741. Under the precedent established in *KSR*, however, the presence or absence of a teaching, suggestion, or motivation to make the claimed invention is merely one factor that may be weighed during the obviousness determination. *Id.* Accordingly, the TSM test should be applied from the perspective of a person of ordinary skill in the art and not the patentee, but that person is creative and not an automaton, constrained by a rigid framework. *Id.* at 1742. However, "the reference[s] must be viewed without the benefit of hindsight afforded to the disclosure." *In re Paulsen*, 30 F.3d 1475, 1482 (Fed. Cir. 1994).

The prior art cited in an obviousness determination should create a reasonable expectation, but not an absolute prediction, of success in producing the claimed invention. *In re O'Farrell*, 853 F.2d. 894, 903-04 (Fed. Cir. 1988). Both the

suggestion and the expectation of success must be in the prior art, not in applicant's disclosure. *Amgen, Inc. v. Chugai Pharmaceutical Co., Ltd.*, 927 F.2d 1200, 1207 (Fed. Cir. 1991) (citing *In re Dow Chem. Co.*, 837 F.2d 469, 473 (Fed. Cir. 1988)). Further, the implicit and inherent teachings of a prior art reference may be considered under a Section 103 analysis. *See In re Napier*, 55 F.3d 610, 613 (Fed. Cir. 1995).

Secondary considerations such as commercial success, long-felt but unsolved needs, failure of others, and unexpected results, if present, can also be considered. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538-39 (Fed. Cir. 1983). Although these factors can be considered, they do not control the obviousness conclusion. *Newell Cos. v. Kenney Mfg. Co.*, 864 F.2d 757, 768 (Fed. Cir. 1988).

To establish obviousness, the prior art references must be evaluated as a whole for what they fairly teach and neither the references' general nor specific teachings may be ignored. *Application of Lundsford*, 357 F.2d. 385, 389-90 (CCPA 1966). A reference must be considered for all that it teaches, not just what purportedly points toward the invention but also that which teaches away from the invention. *Ashland Oil, Inc. v. Delta Resins & Refractories*, 776 F.2d. 281, 296 (Fed. Cir. 1985).

3. Issues on Appeal

Claims 1-9, 11-23, 25-37 and 39-48

Appellant respectfully asserts that the Notten Patent, taken alone or in combination with the Farley Patent, the Podrazhanzky Patent and/or the Yagi Patent fails to teach or suggest the subject matter recited in independent claims 1, 15 and 29 of

the above-referenced application, and the claims which depend from these independent claims at least for the reasons provided in greater detail herein below.

Appellant's invention, as recited in independent claim 1, relates to battery charger configured to provide a temperature-regulated charging of a battery, which comprises the steps of, *inter alia*:

a processing arrangement operable to:

(a) obtain a temperature data associated with the battery; and

(b) apply a particular amount of a charge to the battery based on the temperature data of the battery, **wherein . . . the battery [is maintained] at a predetermined threshold temperature during at least a majority of an entire time period in which the charge is applied to the battery, and wherein, at least when the charge is initially applied to the battery, the particular amount of the charge is 6.5A or greater**.

Independent claims 15 and 29 relate to process and storage medium, respectively, which recite similar subject matter.

It is again respectfully asserted that in clear contrast to Appellant's claimed invention, the Notten Patent fails to teach, suggest or disclose the battery charger, method and storage medium in which **the battery is maintained at a predetermined threshold temperature during at least a majority of an entire time period in which the charge is applied to the battery, *and*** at least **when the charge is initially applied to the battery, the particular amount of the charge is 6.5A or greater**, as recited in independent claims 1, 5 and 29 of the above referenced application.

In the Final Office Action dated June 7, 2007, the Examiner acknowledges that the Notten Patent does not expressly disclose the particular amount of charge

initially applied to the battery is 6.5A or greater. (*See* Final Office Action dated June 7, 2007, p. 5, lns. 19-20.) Examiner contends, however, that the *In re Boesch* case supports his contention that it would be allegedly obvious to a person of ordinary skill in the art to initially apply a charge of 6.5A or greater to the battery described in the Notten Patent. Appellant respectfully disagrees.

The court in *In re Boesch* affirmed the Patent Board's decision affirming an examiner's determination that it was obvious to one skilled in the art to identify an optimum composition for alloys where that optimum value was within a range already disclosed in the prior art. 617 F.2d 272, 275-76 (CCPA 1980). Of great importance in *In re Boesch* was the fact that a range covering the claimed composition had already been disclosed in the art. Conversely, the present application describes using an initial current which is not within a range disclosed in prior art recited by the Examiner and in fact outside of the disclosed range. Indeed, as recited in claims 1, 15 and 29, the particular charge is **6.5A or greater when the charge is initially applied to the battery**. The Notten Patent does not teach, suggest or disclose using any range which includes a charge of 6.5A or higher or any charge range including 6.5A or higher. Therefore, the holding in *In re Boesch* is not a proper precedent to apply for a rejection under Section 103(a) for the amended independent claims 1, 15 and 29.

Further, it is respectfully asserted that at the time of the filing of the present application, it would not have been obvious to one skilled in the art to apply an initial charge of 6.5A to the battery described in the Notten Patent and the Examiner provides absolutely no support in any other reference to teach or suggest that it would be. The Notten Patent describes using a battery simulator to develop a predetermined

curve which is used for charging a battery. (*See* Notten Paten, col. 26, lns. 5-30.) Neither the Notten Patent nor any publication relied on by the Examiner teaches, suggest or discloses at least initially charging a battery with a particular initial charge, much less having such **a charge of 6.5A or greater**, as recited in amended independent claims 1, 15 and 29 of the present invention.

In the Advisory Action dated October 12, 2007, the Examiner states that the Notten Patent "does not seem to place limitations on his charging current." (Advisory Action, sect. 11, p. 2, ln. 6). Then, the Examiner states that the Notten Patent describes the use of NiCd, NiMH, Li-ion and Li-polymer batteries and that the battery management system of the Notten Patent can adopt to different batteries, and points to column 10, ln. 55 and lns. 33-39 of the Notten Patent. (See *id.*, p. 2, lns. 8-9 and 10-11). Further, the Examiner contends that "it is still seen as reasonable that using a higher charging current with an initial charge of 6.5A or greater would have been obvious ... [to] a person of ordinary skill in the art because it would warm the battery up more quickly helping it achieve an optimum level of charging more quickly." (*Id.*, p. 2, lns. 12-14). Appellant respectfully disagrees with such characterization of the teaching of the Notten Patent and the knowledge of those having ordinary skill in the art in view of such teachings.

In particular, Appellant again respectfully asserts that the Examiner has not pointed to any portion of the Notten Patent or any other publication to support the allegations contained in the Advisory Action. Indeed, if the knowledge by those of ordinary skill in the art was so clearly and readily available, it would appear that the Examiner would be able to find a plethora of these references and apply the teachings

thereof to reject independent claims 1, 15 and 29 as being obvious, whether alone or in combination with the Notten Patent. However, no such reference (i.e., which teaches that that the technique of the Notten Patent can be used for at least initially charging a battery with **a particular initial charge of 6.5A or greater**, as explicitly recited in independent claims 1, 15 and 29) has been relied on by the Examiner for rejecting these independent claims.

Instead, a lengthy explanation has been provided as to why the Examiner believes that it would have been obvious to use such initial charge of 6.5A or greater to charge the battery. Nonetheless, the Notten Patent only describes the use of currents of 2.0A or lower, but fails to even mention the possibility of using the initial changes that are greater than 2.0A, much less 6.5A or greater as recited in independent claims 1, 15 and 29. Appellant respectfully asserts that if the use of a changing current in the Notten Patent would have been obvious to those having ordinary skill in the art, it is likely that the Notten Patent would include such disclosure.

While the Notten Patent mentions that the use of the technique and devices described in the specification thereof with NiCd, NiMH, Li-ion and Li-polymer batteries, there is still absolutely no disclosure therein that an initial charge of 6.5A or more can be used to charge such batteries. It appears that the exclusion of such subject matter in the Notten Patent (that is explicitly recited in independent claims 1, 15 and 29) or in any reference relied on by the Examiner in rejecting the pending claims would likely lead one having ordinary skill in the art to a contrary conclusion, i.e., that it would in no way be obvious to use an initial charge of 6.5A or higher with the technique described in the Notten Patent.

Appellant respectfully notes that "the reference[s] must be viewed without the benefit of hindsight afforded to the disclosure." *In re Paulsen*, 30 F.3d 1475, 1482 (Fed. Cir. 1994). Because the Notten Patent has absolutely no disclosure to the use of any change that is greater than 2.0A, much less 6.5A or greater, the Examiner is apparently relying on improper hindsight to reject independent claims 1, 15 and 29 of the present application. The fact that no other reference has been relied on by the Examiner to support such contention that it would have been obvious to one having ordinary skill in the art to use the initial charge of 6.5A or greater with the technique of the Notten Patent appears to be further indicative that improper *hindsight reconstruction* was relied on in finally rejecting these independent claims.

Additionally, as provided in the Advisory Action, the Examiner believes that the Notten Patent discloses that the battery is maintained at a predetermined threshold temperature during at least a majority of an entire time period in which the charge is applied to the battery, and points to Fig. 10a of the Notten Patent to support such belief. (See Advisory Action, sect. 11, p. 2, lns. 2-3). In particular, the Examiner states that "Fig. 10a shows relatively constant temperature from 0-600 mAh for the charging period ... ." (*Id.*)

However, such apparent maintenance of temperature occurs in the Notten Patent during the use of a charge of 2.0A or less. Indeed, the Notten Patent has absolutely no teaching or suggestion, much less disclosure of **such maintenance of temperature during at least a majority of an entire time period *can even occur when the initial charge of 6.5A or higher is applied to charge the battery***. Indeed, absent any such disclosure, it is possible that using the technique of the Notten Patent,

with at least the initial charge of 6.5A or higher, the temperature may not be maintained during at least a majority of an entire time period. Thus, for at least this additional reason, Appellant respectfully asserts that the Notten Patent fails to teach or suggest the battery charger, method and storage medium in which **the battery is maintained at a predetermined threshold temperature during at least a majority of an entire time period in which the charge is applied to the battery, and** *at least when the charge is initially applied to the battery, the particular amount of the charge is 6.5A or greater*, as recited in independent claims 1, 5 and 29 of the above referenced application.

Accordingly, for at least the above described reasons, Appellant respectfully asserts that the Notten Patent does not teach, suggest or disclose **the battery is maintained at a predetermined threshold temperature during at least a majority of an entire time period in which the charge is applied to the battery, *and*** at least **when the charge is initially applied to the battery, the particular amount of the charge is 6.5A or greater**, as recited in independent claims 1, 15 and 29 of the above referenced application. The Farley Patent, the Podrazhanzky Patent and the Yagi Patent do not cure at least these deficiencies of the Notten Patent, and the Examiner does not contend that they do.

Therefore, Appellant respectfully submits that the Notten Patent, taken alone or in combination with the Farley Patent, the Podrazhanzky Patent or the Yagi Patent, fail to teach, suggest or disclose the subject matter recited in independent claims 1, 15 and 29. The claims which depend from these independent claims are also believed to be allowable over the Notten, Farley, Podrazhanzky and Yagi Patents for at

least the same reasons as set forth herein above with respect to amended independent claims 1, 15 and 29.

Appellant respectfully requests the Board to reverse the Examiner's 35 U.S.C. § 103(a) rejections of claims 1-9, 11-23, 25-37 and 39-48.

Claims 52-54

Appellant respectfully asserts that the Notten Patent fails to teach or suggest Appellant's invention, as recited in claims 52-54, for at least the following reason.

Claims 52-54 depend from independent claims 1, 15 and 29, respectively. Accordingly, claims 52-54 are believed to be patentable for the same reasons as provided above with reference to independent claims 1, 15 and 29 as set forth herein above for claims 1, 15 and 29.

In addition, claims 52-54 further recite that **the particular amount of the charge is regulated to be at least one of gradually increased or gradually reduced during the time period in which the charge is applied to the battery**. It is respectfully asserted that in clear contrast to the exemplary embodiment of Appellant's claimed invention recited in these claims, the Notten Patent fails to teach, suggest or disclose such subject matter.

In the Final Office Action dated June 7, 2007, the Examiner points to Figs. 8a and 10a and col. 26, lns. 50-64 of the Notten Patent as allegedly disclosing the regulation of the particular amount of the charge to be at least one of gradually increased or gradually increased. (See Final Office Action dated June 7, 2007, p. 2, lns.

20-23). However, these figures and sections of the Notten Patent only describe and indicate that "[t]he battery voltage of the charging curves shown in FIG. 8a stairs at a value of about 1.3 V and then gradually increases." (Notten Patent, col. 26, lns. 52-54).

Thus, the Notten Patent references a gradual increase of the **battery voltage** or **temperature**, but provides absolutely *no disclosure of any gradual increase and/or decrease of the charge (or current) being applied to the battery*, much less that such gradual increase/decrease of the charge occurs during the entire time period in which the charge is applied to the battery. While the Notten Patent mentions that the current or voltage level supplied by the battery charger 200 may be controlled by the control loop, there is absolutely no mention, much less any *enabling disclosure* of ***gradually*** increasing and/or ***gradually*** decreasing the charge being applied to the battery during the entire time period in which the charge is applied to the battery, as recited in amended independent claims 1, 15 and 29 of the above-identified application.

Further, the Examiner relies on Fig. 10a of the Notten Patent as allegedly showing the use of a charge of 0.1A to provide a substantially level temperature. (See Notten Patent, Fig. 10a). However, as it is known that the charge of 0.1A applied to the battery is a trickle charge, the use of the trickle charge is not a reliable way to maintain the temperature of the battery in any active manner. In fact, such trickle charge can be small enough so as to reduce the temperature of the battery, while still maintaining the charge of the battery, and thus no maintenance of the temperature is being performed. In any event, even with the Examiner's allegation contained on page 10, second paragraph of the Final Office Action dated June 7, 2007, there is no disclosure in Figs. 8a and 10a or anywhere in the Notten Patent of gradually increasing or decreasing the

charge being applied in any manner – indeed, it appears that in the Notten Patent, the charge applied to the battery to be maintained the same, while *the temperatures and/or voltages are changing.*

Accordingly, for at least the above described reasons, Appellant respectfully asserts that the Notten Patent does not teach, suggest or disclose that **the particular amount of the charge is regulated to be at least one of gradually increased or gradually reduced during such time period**, as recited in claims 52-54. The Farley Patent, the Podrazhanzky Patent and the Yagi Patent do not cure at least these deficiencies of the Notten Patent, and the Examiner does not contend that they do.

Therefore, Appellant respectfully submits that the Notten Patent, taken alone or in combination with the Farley Patent, the Podrazhanzky Patent or the Yagi Patent, fail to teach, suggest or disclose the subject matter recited in claims 52-54.

Appellant respectfully requests the Board to reverse the Examiner's 35 U.S.C. § 103(a) rejection of claims 52-54.

4. Conclusion

For at least the reasons indicated above, Appellant respectfully submits that the invention recited in the presently rejected claims of the present application, as discussed above, is new, non-obvious and useful. Reversal of the Examiner's final rejections of the claims is therefore respectfully requested.

Respectfully submitted,

Dated: February 8, 2008

By: _____

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CLAIMS APPENDIX

Claims as currently pending:

1. A battery charger configured to provide a temperature-regulated charging of a battery, comprising:

a processing arrangement operable to:

(a) obtain a temperature data associated with the battery; and

(b) apply a particular amount of a charge to the battery based on the temperature data of the battery, wherein the processing arrangement is configured to maintain the battery at a predetermined threshold temperature during at least a majority of an entire time period in which the charge is applied to the battery, wherein, at least when the charge is initially applied to the battery, the particular amount of the charge is 6.5A or greater.

2. The battery charger according to claim 1, wherein the processing arrangement is further operable to:

(c) obtain a voltage data associated with the battery; and

(d) apply a charge to the battery, the charge being determined based on the voltage data of the battery.

3. The battery charger according to claim 1, wherein the charge is applied to the battery until charging of the battery is substantially completed.

4. The battery charger according to claim 1, wherein the processing arrangement is further operable to reading a voltage of the battery to determine if charging of the battery is substantially complete.

5. The battery charger according to claim 1, wherein the processing arrangement is further operable to:

(c) measure a first voltage across a terminal of the battery;

(d) measure a second voltage across the terminals of the battery after step (c);

(e) determine a difference between the first voltage and the second voltage; and

(f) repeat procedures (c)-(e) until charging of the battery is substantially complete.

6. The battery charger according to claim 1, further comprising at least one temperature sensor mounted on or in the battery, wherein the temperature sensor measures the temperature of the battery.

7. The battery charger according to claim 1, further comprising at least one temperature sensor, wherein the temperature sensor measures an ambient temperature.

8. The battery charger according to claim 1, wherein the charge applied to the battery allows a maximum charge intensity during charging of the battery as a function of the temperature data without damaging the battery.

9. The battery charger according to claim 1, wherein the processing arrangement regulates the particular amount of the charge supplied to the battery as a function of the temperature data.

Claim 10 (Cancelled).

11. The battery charger according to claim 1, wherein the charge applied to the battery is based on one of voltage measurements and temperature measurements of the battery.

12. The battery charger according to claim 1, wherein the amount of the charge provided to the battery is capable of being increased based on a change in the temperature data of the battery.

13. The battery charger according to claim 1, wherein the battery comprises at least one of a nickel metal hydride battery, a nickel cadmium battery, a lead acid battery or a lithium ion battery.

14. The battery charger according to claim 1, wherein the processing arrangement is further operable to cool the battery using a cooling arrangement.

15. A process for providing a temperature-regulated charging of a battery, comprising:

(a) obtaining a temperature data associated with the battery; and

(b) applying a particular amount of a charge to the battery based on the temperature data of the battery, wherein the processing arrangement is configured to maintain the battery at a predetermined threshold temperature during at least a majority of an entire time period in which the charge is applied to the battery, wherein, at least when the charge is initially applied to the battery, the particular amount of the charge is 6.5A or greater.

16. The process according to claim 15, further comprising:

(c) obtaining a voltage data associated with the battery; and

(d) applying a charge to the battery, the charge being determined based on the voltage data of the battery.

17. The process according to claim 15, wherein the charge is applied to the battery until charging of the battery is substantially completed.

18. The process according to claim 15, further comprising using a voltage of the battery to determine if charging of the battery is substantially complete.

19. The process according to claim 15, further comprising:

(c) measuring a first voltage across a terminal of the battery;

(d) measuring a second voltage across the terminals of the battery after step (c);

(e) determining a difference between the first voltage and the second voltage; and

(f) repeating steps (c)-(e) until charging of the battery is substantially complete.

20. The process according to claim 15, wherein at least one temperature sensor is mounted on or in the battery, wherein the temperature sensor measures the temperature of the battery.

21. The process according to claim 15, wherein at least one temperature sensor, wherein the temperature sensor measures an ambient temperature.

22. The process according to claim 15, wherein the charge applied to the battery allows a maximum charge intensity during charging of the battery as a function of the temperature data without damaging the battery.

23. The process according to claim 15, wherein the temperature-regulated charging is controlled by a processing arrangement, and wherein the processing arrangement regulates the particular amount of the charge supplied to the battery as a function of the temperature data.

Claim 24 (Cancelled).

25. The process according to claim 15, wherein the charge applied to the battery is based on one of voltage measurements and temperature measurements of the battery.

26. The process according to claim 15, wherein the amount of the charge provided to the battery is capable of being increased based on a change in the temperature data of the battery.

27. The process according to claim 15, wherein the battery comprises at least one of a nickel metal hydride battery, a nickel cadmium battery, a lead acid battery or a lithium ion battery.

28. The process according to claim 15, further comprising cooling the battery using a cooling arrangement.

29. A storage medium for providing a temperature-regulated charging of a battery, comprising:

a software arrangement capable of configuring a processing arrangement accessing the storage medium to:

(a) obtain a temperature data associated with the battery; and

(b) apply a particular amount of a charge to the battery based on the temperature data of the battery, wherein the processing arrangement is configured to maintain the battery at a predetermined threshold temperature during at least a majority of an entire time period in which the charge is applied to the battery, wherein, at least when the charge is initially applied to the battery, the particular amount of the charge is 6.5A or greater.

30. The storage medium according to claim 29, wherein the software arrangement is capable of further configuring the processing arrangement to:

(c) obtain a voltage data associated with the battery; and

(d) apply a charge to the battery, the charge being determined based on the voltage data of the battery.

31. The storage medium according to claim 29, wherein the charge is applied to the battery until charging of the battery is substantially completed.

32. The storage medium according to claim 29, wherein the software arrangement is capable of further configuring the processing arrangement to use a voltage of the battery to determine if charging of the battery is substantially complete.

33. The storage medium according to claim 29, wherein the software arrangement is capable of further configuring the processing arrangement to:

(c) measure a first voltage across a terminal of the battery;

(d) measure a second voltage across the terminals of the battery after step (c);

(e) determine a difference between the first voltage and the second voltage; and

(f) repeat procedures (c)-(e) until charging of the battery is substantially complete.

34. The storage medium according to claim 29, further comprising at least one temperature sensor mounted on or in the battery, wherein the temperature sensor measures the temperature of the battery.

35. The storage medium according to claim 29, further comprising at least one temperature sensor, wherein the temperature sensor measures an ambient temperature.

36. The storage medium according to claim 29, wherein the charge applied to the battery allows a maximum charge intensity during charging of the battery.

37. The storage medium according to claim 29, wherein the temperature-regulated charging is controlled by the processing arrangement, and wherein the processing arrangement regulates the particular amount of the charge supplied to the battery as a function of the temperature data.

Claim 38 (Cancelled).

39. The storage medium according to claim 29, wherein the charge applied to the battery is based on one of voltage measurements and temperature measurements of the battery.

40. The storage medium according to claim 29, wherein the amount of the charge provided to the battery is capable of being increased based on a change in the temperature data of the battery.

41. The storage medium according to claim 29, wherein the battery comprises at least one of a nickel metal hydride battery, a nickel cadmium battery, a lead acid battery or a lithium ion battery.

42. The storage medium according to claim 29, wherein the software arrangement is capable of further configuring the processing arrangement to cool the battery using a cooling arrangement.

43. The battery charger according to claim 1, wherein the time period is the period from a start of the charge applied to the battery and ends approximately when a peak charge of the battery has occurred.

44. (Currently Amended) The process according to claim 15, wherein the time period is the period from a start of the ~~a~~ charge applied to the battery and ends approximately when a peak charge of the battery has occurred.

45. The storage medium according to claim 29, wherein the time period is the period from a start of the charge applied to the battery and ends approximately when a peak charge of the battery has occurred.

46. The battery charger according to claim 1, wherein the charge applied to the battery is a non-trickle charge.

47. The process according to claim 15, wherein the charge applied to the battery is a non-trickle charge.

48. The storage medium according to claim 29, wherein the charge applied to the battery is a non-trickle charge.

Claims 49-51 (Cancelled)

52. The battery charger according to claim 1, wherein the processing arrangement is operable to regulate the particular amount of the charge to be at least one of gradually increased or gradually reduced during the time period.

53. The process according to claim 15, further comprises regulating the particular amount of the charge to be at least one of gradually increased or gradually reduced during the time period.

54. The storage medium according to claim 29, wherein the software arrangement is adapted to configure the processing arrangement to regulate the particular amount of the charge to be at least one of gradually increased or gradually reduced during the time period.

EVIDENCE APPENDIX

Nothing to include

RELATED PROCEEDINGS APPENDIX

Nothing to include